NEW SPECIES OF CORYLOPHIDAE (COLEOPTERA).

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(Seven Text-figures).

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There has been a scarcity of information regarding the Australian Corylophidae; Lea's paper (Proc. Linn. Soc. N.S.W., Vol. x, Ser. 2, 1895) constitutes the bulk of the literature. The drawings herewith are, I believe, the first to appear of the Australian members of the group. Matthews' monograph of the world's representatives should also be consulted.

Help has been afforded by auxiliary microscope equipment kindly put at my disposal by Mr. H. P. Colwell, M.I.E.Aust., as a result of which I have been able definitely to establish the tarsal formula as 3-4-4 for the new species of *Sericoderus*.

I must mention here my gratitude to Mr. John Clark, F.L.S., Mr. F. E. Wilson, F.E.S., and Mr. C. Oke, of Melbourne, for assistance in the loan of literature, and especially to Mr. Clark and Mr. Wilson for their generous advice and material, which have enabled me to arrive at my conclusions.

Sericoderus.

In general appearance, both on dorsal and ventral surfaces, the new species herein proposed under *Sericoderus* agree sufficiently with some of the Australian species previously described under this genus to warrant their being included provisionally with them.

Owing to the difference between the forms inhabiting one part of the world from those of another, I have thought it advisable to give for the new species in common those characters which may be considered to be of generic status. These are as follows:

Generic Characters.—Ovate, convex, somewhat robust, margin entire, widest across base of pronotum. Head completely concealed from above by hood of pronotum; small, somewhat rostrate; rostrum broad, blunt, subquadrate. Eyes large, rather receding, coarsely faceted, not widely separated. Antennae of medium length, incrassate, clavate; scape and pedicel large, scape larger than pedicel, segments 3 to 7 small, 8 to 10 large, forming the club. Pronotum rather large, broad at base, forming acute posterior angles; evenly rounded in front from side to side; entirely without anterior angles. Scutellum small, shield-shaped. Elytra wider at base than apex, almost covering abdomen. Pygidium widely rounded at apex. Prosternum strongly arcuately concave posteriorly. Mesosternum very short, receding. Metasternum large, not attaining sides; episterna and epimera distinct, the former long, curved, tapering posteriorly; hind margin convex at centre, concave at outer thirds. Abdomen with six visible ventral segments, basal one rather long, remainder evenly spaced; pygidium rounded, not

dentate. Anterior coxae of medium size, oval, oblique, contiguous. Intermediate coxae small, globular, separated, situated in rather close proximity to anterior pair. Posterior coxae of medium size to small, subtriangular, somewhat transverse, widely separated, very distant from intermediate. None of the coxae prominent. Femora broad; tibiae rather narrow, usually reversely arcuate somewhere on basal half. Tarsi 3-segmented in the anterior, 4-segmented in intermediate and posterior pairs; claws well formed. Wings broad; hair fringes very short on front margin, on hind margin equal to about one-fifth of width of membrane.

In commenting on the position of this genus it is impossible to give any close relationships to any of the other Australian genera on account of its wide divergence; the prosternum, however, has in the protecting hood for the head a feature in common with *Clypeaster*, from which, except for the antennae, it differs less in most respects than it does from *Corylophodes* and *Aphanocephalus*.

Sericoderus incrassatus, n. sp. Text-fig. 1.

Oval, convex, widest across base of pronotum, lightly pubescent, dark reddish-brown. Head rather narrow; muzzle short, blunt; eyes rather large. Antennae with scape and pedicel and segments 3 to 7 yellow; 8 to 10 brown, of nearly equal width, clothed with hairs. Pronotum convex, more so than elytra. Scutellum small. Elytra tapering, black near and at apex. Prosternum and mesosternum yellow; metasternum and abdomen darker. Legs yellow, rather long; posterior coxae small. Length 1·25 mm.; width 0·885 mm.

Habitat.—Fern Tree Gully, Victoria (Deane, Oke, Blackwood).

Type in National Museum, Melbourne, cotypes in colls. Deane and Oke.

This species is found in rotting leaf debris, and is probably common under tree-ferns in the hills and mountains, also in the neighbourhood of Warburton and Gembrook.

Sericoderus quadratus, n. sp. Text-fig. 2.

Subquadrate, convex above, robust, pubescent, brown. Head narrow, muzzle narrowed in centre; mouth parts, scape and pedicel yellow; flagellum dark brown, clothed with brownish-black hairs; three apical segments not close fitting, subapical two truncate anteriorly. Pro- and mesosternum yellow. Metasternum dark brown, lightly convex. Abdomen rather flat. Legs yellow. Posterior coxae large. Elytra parallel. Length 0·91 mm.; width 0·65 mm.

Habitat.—Melton, Victoria (Deane; in rubbish).

Type in National Museum.

This species is most readily distinguished from the previous one by its quadrate form, elytra parallel instead of tapering, and the posterior coxae being much larger. The abdomen is almost completely concealed from above by the elytra. In addition, the antennae, rostrum and metasternal episterna are of different form, as depicted in the figures; but these are not readily determined on a casual examination with a hand lens.

Sericoderus latus, n. sp. Text-fig. 3.

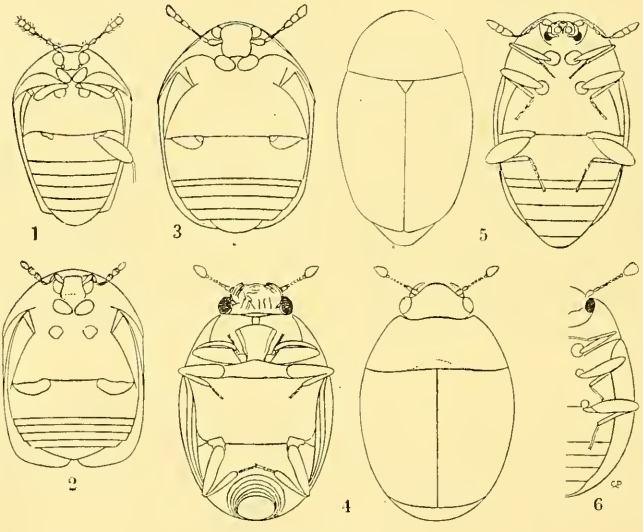
Obovate, convex, widest a little across base of pronotum, pubescent, yellowish-brown. Head with muzzle broad, subquadrate, and constricted at centre. Eyes black. Antennae with scape, pedicel and segments 3 to 7 yellow, 8 to 10 dark purplish-brown increasing in width, forming the club. Pronotum with

front and sides forming one continuous curve; posterior margin convex at centre, strongly concave near angles. Scutellum small, brown, triangular; sides concave. Elytra subparallel; apical outer angles greatly rounded; slightly dehiscent. Ventral surface, except legs and posterior halves of abdominal segments, brown, remainder as above. Wings broad; hair fringes short. Length 0·84 mm.; width 0·615 mm.

Habitat.—Bogan R., N.S.W. (J. Armstrong).

Type in coll. Deane, cotypes in coll. Armstrong.

Differs from *S. incrassatus* by antennae not so conspicuously clothed with hairs, elytra less tapering, coxae of different form, and posterior femora much flatter. In addition, the much smaller size and different arrangement of coloration render this insect easily distinguishable from the genotype.



Text-figs. 1-6.

1.—*Sericoderus incrassatus*, n. sp. 2.—*S. quadratus*, n. sp.
3.—*S. latus*, n. sp. 4.—*Ittrion prosternalis*, n.g. et sp.
5.—*Clypeaster* sp. 6.—*Aphanocephalus punctatus* Blackb.

ITTRION, n. gen. Text-fig. 4.

Oval, highly convex, robust; margin entire, except for head when elevated; widest across middle. Head medium to broad, not covered by prothorax. Eyes set somewhat outwards, visible from above, except when head retracted, then scarcely so; of medium size, not close together. Antennae rather short, clavate, 9-segmented; scape large, concealed; pedicel rather large; segments 3 to 8 small, 7 and 8 consecutively very slightly wider; apical segment very large, this one only forming the club. Pronotum convex, widest at base, not emarginate; sides evenly curved, continuous with sides of elytra; posterior angles a little acute, anterior obtuse; front margin concave, excavated slightly for reception of head; hind margin almost straight. Scutellum invisible. Elytra convex, widest at anterior quarter, side margins curved under, forming epipleurae; basal angles

obtuse; apices close fitting, not dehiscent, exposing pygidium; medial apical angles right angles or a little acute; outer apical angles obsolete. Prosternum convex, with a prominent shield process, standing out a little from body, open in front, forming a pocket. Mesosternum short convex. Metasternum convex, long, not attaining sides of body, bounded by episterna; posterior margin excavated for reception of coxae. Abdomen convex; basal segment large, immobile; remaining segments of peculiar setting, nearly their complete section being visible from the ventral aspect, apical tergite wholly visible from below when abdomen contracted, all sclerites except basal tergite being presented ventrally. Anterior coxae of medium size, well separated. Intermediate coxae transverse, remote. Posterior coxae transverse, remote, well defined, not lamellate, flush with metasternal and abdominal sternites. Legs rather small; femora, especially anterior, broad; anterior tibiae recurved; tarsi 4-segmented, normal. Wings with complex folding. Genotype, *I. prosternalis*.

The insect described under this genus does not bear any close resemblance to any other with which I am familiar. In *Aphanocephalus* (formerly *Eleothreptus*) *punctulatus* Blackburn, there is a swelling or prominence of the prosternum which is faintly suggestive of the process which is a strong feature in the new species, and in the antennae it shares in common the single segmented club. In other respects, however, it is widely different. Superficially from above it has somewhat the facies of *Corylophodes*, but on closer examination the similarity fades.

ITTRION PROSTERNALIS, n. sp. Text-fig. 4.

Glabrous, smooth, nitid, reddish-brown. Apical segment of antenna broad, supported eccentrically, pointed; clothed with short, thick, cream-coloured setae. Metasternum with thinly scattered shallow irregular punctures. Wings present. Length 1·095 mm.; width 0·72 mm.

Habitat.—Bogan R., N.S.W. (J. W. T. Armstrong).

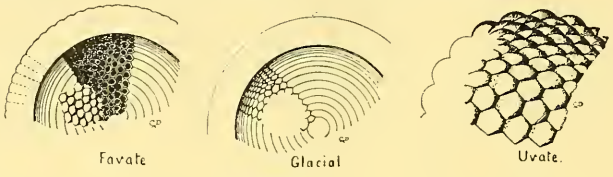
Type in coll. Deane; cotype in coll. Armstrong.

Key to Genera of Corylophidae.

1. Club of antenna unisegmental; pronotum not entirely concealing head; lateral margins of elytra curved under very conspicuously 2
   Club of antenna 3-segmented; pronotum entirely concealing head; lateral margins of elytra not as above 3
2. Apical segment of antenna truncate; scutellum visible; incurved margins of elytra strongly epipleuriform; abdomen simple; size large ..... *Aphanocephalus*
   Apical segment of antenna pointed; scutellum invisible; incurved margins of elytra not strongly epipleuriform (see note below); abdomen irregular ..... *Ittrion*
3. Form somewhat narrow; rostrum small; antennae irregular; anterior margin of pronotum noticeably reflex; elytra almost or completely covering abdomen ..... *Clypeaster*
   Form rather wider 4
4. Anterior margin of pronotum only faintly emarginate; elytra exposing more than the apical segment of abdomen; upper surface pubescent; rostrum sometimes large, thick ..... *Sericoderus*
   Upper surface smooth, glabrous, nitid, highly convex; rostrum not so conspicuous ..... *Corylophodes*

Note.—The incurving of the elytral margins in the case of the genus *Ittrion* is gradual from upper to lower surface, there being no edge or margin separating the surface of the elytron proper from the epipleura.

It must be understood that the above key is only tentative; it is not intended that it should place any restriction on the allotting of further new species or prescribe the characters that they should possess before being allowed inclusion in the genera mentioned; the family has hardly been touched upon, as far as Australian species are concerned, only a few species having been described, and it is too early to establish a table on a more permanent basis. The characters outlined, however, will serve to promote a familiarity with the genera.



Text-fig. 7.

In examining the structure of very small beetles in general I have been struck with the circumstance that with most parts the details are as elaborate as in the larger forms. For instance, the antennae may have just as many segments, and these may be no simpler in their individual structures. The same can be said of palpi, tarsi, etc. But when we come to examine the eyes it is found that the facets break away from the rule, the number of facets falling

Table Indicating Size and Type of Eyes of Insects.

Order.	Family.	Genus.	Size.	'h.'	Eye.	
					Type.*	Facets.
Lepidoptera	Papilionidae	Troides	1	11·8	Favo-Uvate	31,900
Coleoptera	Cicindelidae	Megacephala	3	7·9	Glacial	12,265
,,	,,	Cicindela	5		Favate	5,400
,,	Carabidae	Tachys	7	5·9	Uvate	87
,,	Trichopterygidae		10		,,	225
Diptera	Syrphidae	Eristalis	3	10·5	Favate	27,100
,,	,,	,,	3	9·9	Setose-Uvate	15,830
,,	Sepsidae	Sepsis	6	4·7	Favo-Uvate	2,320
,,	Asilidae	Blepharotes	1	11·8		16,700
Odonata		Austroaeschna	1	15·7	Favate	25,800
Hemiptera	Cicadidae	Cyclochila	1	14·1	,,	21,200
,,	Reduviidae	Pristhesancus	2	9·4	,,	1,800
,,	Pentatomidae	Dindymus	3	9·4		726
Hymenoptera	Pompilidae	Salius	1	11·1		22,810
,,	Formicidae	Myrmecia	1	9·4	Uvate	2,219
Orthoptera	Mantidae	Tenodera	1	13·4	Favate	7,220
Mecoptera	Bittacidae	Harpobittacus	2	6·7	Favo-Uvate	3,750
Neuroptera			1			
Dermaptera		Labidura	2	15·7		495
Isoptera	Termitidae		4	11·8	× × ×	129
Thysanoptera		Thrips	10	4·7	Uvate	26
Thysanura			3			12

'h' = minor diameter of facet in ten-thousandths of an inch.

* Text-fig. 7 illustrates the terms used under this heading.

far short of the numbers possessed by the large beetles; in actual size, the eye elements or ommatidia are not proportionally smaller in the minute beetles (see accompanying table). In fact there seems to be a limit of size, and beyond this ommatidia of smaller dimensions do not appear to exist. It may be that maintenance of a satisfactory minimum is necessary in order to allow the light rays to have free play for their vibrations, and if the dimensions were not of sufficient magnitude it would result in the insects being devoid of powers of vision. Hence a standard is maintained.